

Assignment 4

Decimals; Percentage and Measurement; Exponents and Radicals

Textbook Assignment: Chapters 5 (51-54), 6, 7 (65)

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- 4-1. In multiplying a decimal by a whole number, the location of the decimal point in the product is determined by counting the number of places in the whole number.
- 4-2. Assuming an allowance of 0.010 inch for each saw cut, what length of stock would be required to produce 18 machine parts if each part is to be 2.002 inches long?
[Hint: There are 17 saw cuts.]
- | | |
|---------------|---------------|
| 1. 362.06 in. | 3. 36.206 in. |
| 2. 216.36 in. | 4. 21.636 in. |
- 4-3. When two decimals are multiplied, placing the decimal point is in effect multiplying the numerators.
- 4-4. A rule for placing the decimal point in multiplying decimals is that the number of decimal places in the answer is equal to
1. the number of decimal places in the multiplier
 2. the number of decimal places in both the multiplier and the multiplicand
 3. twice the number of decimal places in both the multiplier and the multiplicand
 4. the number of decimal places in the multiplicand less the number of decimal places in the multiplier
- 4-5. The product of 40.6 and 0.18 is
- | | |
|-----------|----------|
| 1. 40.78 | 3. 7.308 |
| 2. 0.7308 | 4. 73.08 |
- 4-6. A steel rod that is 39 inches long at 65° C expands 0.0000133 inch for each inch of its length for every degree of temperature increase. How much would its length increase if its temperature rose to 600° C?
- | | |
|------------------|------------------|
| 1. 0.0005187 in. | 3. 0.027557 in. |
| 2. 0.007155 in. | 4. 0.2775045 in. |
- 4-7. What is the product of 17.250 and 10,000?
- | | |
|---------------|--------------|
| 1. 17.2500000 | 3. 172,500 |
| 2. 17,500 | 4. 1,725,000 |
- 4-8. It is decided to terminate a quotient at the second decimal place. To determine the correct rounding, the division should be carried to
1. at least to the fourth decimal place
 2. the third decimal place
 3. the second decimal place
 4. the first decimal place
- 4-9. How much is 19.37 divided by 5 carried to three decimal places?
- | | |
|----------|----------|
| 1. 0.387 | 3. 3.870 |
| 2. 3.670 | 4. 3.874 |
- 4-10. The quotient of 0.00243 divided by 18 is
1. 0.0000135
 2. 0.000135
 3. 0.00135
 4. 0.0135
- 4-11. Moving the decimal point two places to the right in the dividend and the divisor in the example
- $$\begin{array}{r} 5.10 \\ 1.25 \overline{) 6.3810} \end{array}$$
- is equivalent to
1. dividing the quotient by 100
 2. multiplying the quotient by 100
 3. dividing both 1.25 and 6.381 by 100
 4. multiplying both 1.25 and 6.381 by 100
- 4-12. The quotient of 0.02146 ÷ 0.012 rounded to three decimal places is
1. 1.788
 2. 1.789
 3. 17.882
 4. 17.883
- 4-13. To divide a number by 100, move the decimal point two places to the right.
- 4-14. Division by 10 is the same as multiplication by 0.1.

- 4-15. Division by 0.1 is the same as multiplication by 10.
- 4-16. 85% is equivalent to
 1. 0.85
 2. $\frac{85}{100}$
 3. 85 parts out of 100
 4. all of the above
- 4-17. Percent is more often used to represent absolute values than relative values.
- 4-18. In computations, percents are normally changed to decimal forms.
- 4-19. The decimal fraction 0.00014 can be written as
 1. 0.0000014%
 2. 0.0014%
 3. 0.014%
 4. 0.14%
- 4-20. Which is the largest of the following expressions?
 1. 0.00401%
 2. 0.0401%
 3. 0.401%
 4. 4.01%
- 4-21. How is the number 25 expressed as a percent?
 1. 0.25%
 2. 25%
 3. 250%
 4. 2500%
- 4-22. A percentage greater than 100 has no meaning.
- 4-23. If the 1965 production was 200% of the 1964 production and the 1964 production was 50 tons, the 1965 production was
 1. increased by 200%
 2. 150 tons
 3. 100 tons
 4. 50 tons
- 4-24. There was a 200% increase in production from 1964 to 1965. If the 1964 production was 400 tons, the total 1965 production was
 1. 400 tons
 2. 600 tons
 3. 800 tons
 4. 1200 tons
- 4-25. If a baseball player's batting average is quoted as 265, how often has he gotten a hit?
 1. 0.265% of the time
 2. 2.65 times out of 100
 3. 26.5% of the time
 4. 265% of the time
- 4-26. To change a percent to a decimal, drop the percent sign and add two zeros.
- 4-27. To change a percent larger than 100 percent to a decimal, drop the percent sign and
 1. move the decimal point two places to the left
 2. move the decimal point two places to the right
 3. subtract 100 percent from the original figure and change the result to a decimal
 4. divide the original figure by 10 before changing it to a decimal
- 4-28. What is the rate, base, and percentage of the equation $\frac{3}{4} = 75\%$?
 1. Rate 75%, base 4, percentage 3
 2. Rate 75%, base 3, percentage 4
 3. Rate 3, base 4, percentage 75%
 4. Rate 4, base 3, percentage 75%
- 4-29. The result of finding 22% of 44 is
 1. 200
 2. 20.0
 3. 9.68
 4. 6.6
- 4-30. A 20-gallon tank has 5 gallons left in it. What percent of the tank is empty?
 1. 15 percent
 2. 25 percent
 3. 50 percent
 4. 75 percent
- 4-31. Which decimal expresses $\frac{1}{4}\%$?
 1. 0.0025 3. 0.25
 2. 0.025 4. 2.5

- 4-32. Under certain conditions the speed of an aircraft is 15 percent faster than that registered by the speed indicator on the instrument panel. If the indicator shows a speed of 285 miles per hour, what is the actual speed of the aircraft?
1. 248 mph
 2. 307 mph
 3. 320 mph
 4. 328 mph
- 4-33. What is the correct procedure for finding what percent one number is of another number?
1. Multiply the two numbers together and divide by 100.
 2. Divide the smaller number by the larger number and divide again by 100.
 3. Divide one number by the other, expressing the quotient in decimal form; then multiply this decimal by 100.
 4. Divide one number by the other, expressing the quotient in decimal form; then divide this decimal by 100.
- 4-34. The number 2 is what percent of 400?
1. 0.05%
 2. $\frac{1}{2}\%$
 3. 50%
 4. 200%
- 4-35. Three percent of what number is 9?
1. 0.0033
 2. 0.27
 3. 30
 4. 300
- 4-36. Bill's income is 70% of John's income. If Bill's income is \$4,900 a year, what is John's income?
1. \$3,430
 2. \$6,370
 3. \$7,000
 4. \$7,500
- 4-37. Assume that your ship is leaving a harbor in heavy seas, and that 65 percent of the crew of 325 men have never been to sea before. It is expected that about 40 percent of the new men will become seasick. Approximately how many of the new men are likely to become seasick?
1. 50
 2. 85
 3. 128
 4. 215
- 4-38. $\frac{1}{4}\%$ is what percent of $\frac{1}{2}\%$?
1. 50%
 2. 200%
 3. 0.5%
 4. 0.005%
- 4-39. It is not necessary to round off the decimal equivalent of $\frac{3}{8}$, 0.375, when adding it to the decimal equivalent of $\frac{3}{4}$, 0.75.
- 4-40. The concepts of precision and accuracy are necessary considerations when dealing with measurements.
- 4-41. The maximum probable error in an instrument marked off in hundredths of an inch is
1. 0.5 in.
 2. 0.05 in.
 3. 0.005 in.
 4. 0.0005 in.
- 4-42. Precision of a measurement refers to the size of the smallest division on the scale.
- 4-43. The precision of the sum of the numbers 4.2, 4.23, 4.236, and 4.2367, which were determined from measurements with four different instruments, is no greater than the precision of
1. 4.2
 2. 4.23
 3. 4.236
 4. 4.2367
- 4-44. If the numbers 29.138, 19.21, 130.68, and 84.9823 are accurate only to the last place shown, what is the best way to add them?
1. Round off all numbers to one decimal place and then add.
 2. Round off all numbers to two decimal places and then add.
 3. Round off all numbers to three decimal places and then add.
 4. Do not round off any of the numbers, but add them as given.
- 4-45. To subtract 8.173 grams from 13.62 grams, round 8.173 grams to two decimal places.

- 4-46. What is the sum of $\frac{5}{6}$, $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{11}{12}$ expressed as a decimal fraction and rounded to thousandths?
1. 2.496
 2. 2.499
 3. 2.500
 4. 2.501
- 4-47. A measurement of $4\frac{6}{8}$ is recorded from a ruler marked in eighths and a measurement of $4\frac{12}{16}$ from a ruler marked in sixteenths. Which is true regarding the precision of the two measurements?
1. $4\frac{6}{8}$ is more precise.
 2. $4\frac{12}{16}$ is more precise.
 3. There is no difference in the precision.
 4. It depends on the person performing the measurement.
- 4-48. An error of 0.01 inch in a 2.5-inch bolt is more nearly accurate than an error of 0.1 inch in a 6-foot board.
- 4-49. Considering the maximum probable error of measurements for 18.6 inches and 22 feet, the precision and accuracy may be summarized by which statement? [Hint: 22 feet can be measured carefully enough to be correct to the nearest inch.]
1. 18.6 inches is more precise; 22 feet is more accurate.
 2. 18.6 inches is more precise; 18.6 inches is more accurate.
 3. Equally precise; 22 feet is more accurate.
 4. Equally precise; 18.6 inches is more accurate.
- 4-50. What is the relative error in measuring a rivet spacing of 2.6 inches correct to the nearest tenth of an inch?
1. 0.0192%
 2. 0.038%
 3. 1.9%
 4. 3.8%
- 4-51. How many significant digits are there in the expression 0.0807?
1. Two
 2. Three
 3. Four
 4. Five
- 4-52. The number of significant digits in the number 2400 is
1. two
 2. three
 3. independent of the original measurement
 4. dependent upon the original measurement
- 4-53. The number of significant digits in 6.170 hours is
1. one
 2. two
 3. three
 4. four
- 4-54. The number of significant digits in 0.00034 is
1. two
 2. four
 3. five
 4. six
- 4-55. The percent of error in 47.62 miles is
1. 0.0001%
 2. 0.0002%
 3. 0.01%
 4. 0.02%
- 4-56. To add and subtract numbers resulting from measurement, all numbers must be rounded to the most precise number in the group to be combined.
- 4-57. The product of the approximate numbers 3.31 and 2.64 should be rounded to
1. 8.74
 2. 8.7384
 3. 8.738
 4. 8.73
- 4-58. The quotient of the approximate number 24 divided by the approximate number 0.3817 is
1. 62.8
 2. 62.83
 3. 62.87
 4. 63
- 4-59. What is the area of a rectangle if its length is 2.4 feet and its width is 3.16 feet?
1. 7.584 sq ft
 2. 7.6 sq ft
 3. 7.68 sq ft
 4. 7.7 sq ft
- 4-60. An ordinary micrometer without a vernier scale can measure to the nearest
1. tenth of an inch
 2. fortieth of an inch
 3. thousandth of an inch
 4. ten-thousandth of an inch

4-61. What is the difference between readings for each of the minor divisions on the sleeve of a micrometer?

1. 0.001 in.
2. 0.005 in.
3. 0.025 in.
4. 0.05 in.

4-62. The distance between consecutive numbers on the sleeve of a micrometer represents a measurement of 0.025 inch.

4-63. The space between the adjacent markings on the thimble of a micrometer is what distance?

1. 0.0001 in.
2. 0.001 in.
3. 0.025 in.
4. 0.1 in.

4-64. What is the reading on the micrometer in figure 4A?

1. 0.204 in.
2. 0.224 in.
3. 0.234 in.
4. 0.259 in.

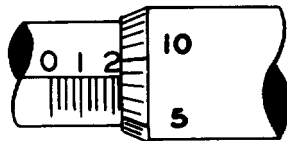


Figure 4A-Micrometer.

4-65. Assume that the thimble of the micrometer pictured in figure 4A has been rotated until only two marks in addition to the zero mark are visible on the sleeve, and the second horizontal mark below the zero on the thimble is exactly aligned. What is the reading?

1. 0.071 in.
2. 0.073 in.
3. 0.075 in.
4. 0.077 in.

4-66. The vernier principle always utilizes one more marking on the vernier than the number of markings on an equal space of the conventional scale of the measuring instrument.

-67. A vernier micrometer can measure to the nearest

1. four-hundredth of an inch
2. thousandth of an inch
3. ten-thousandth of an inch
4. hundred-thousandth of an inch

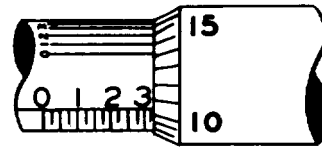


Figure 4B-Vernier micrometer.

● In items 4-68 and 4-69, refer to figure 4B.

4-68. What is the reading on the vernier micrometer?

1. 0.2375 in.
2. 0.3307 in.
3. 0.3351 in.
4. 0.338 in.

4-69. Assume that two vertical marks are visible to the right of the numeral 3, the thimble is set between the 5 and 6 marks, and vernier mark 6 is aligned exactly. What is the reading on the vernier micrometer?

1. 0.3306 in.
2. 0.350 in.
3. 0.3556 in.
4. 0.361 in.

4-70. What is the square root of a number?

1. The result obtained by dividing the number by itself
2. The number which when multiplied by itself produces the original number
3. The reciprocal of the number
4. The result obtained by dividing a number by half its value

4-71. The square of a number is another way of saying

1. 2 times the number
2. 4 times the number
3. the number is multiplied by itself
4. the number is added to itself

4-72. Which number is 3 raised to the fourth power?

1. 81
2. 64
3. 27
4. 12

4-73. What does the term 5^3 mean?

1. The cube root of 5 is 3.
2. 5 is multiplied by 3.
3. 5 is multiplied as a factor 3 times.
4. 3 is taken as a factor 5 times.

4-74. Which base when raised to the fifth power gives an answer of thirty-two?

1. 1
2. 2
3. 4
4. 8

4-75. The exponent of 4 is 0.